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DECORATED GYPSUM BOARD AND METHOD OF MAKING SAME

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7 Claims

ABSTRACT OF THE DISCLOSURE

A porous decorated paper is made by first coating and then embossing a paper sheet, and a predecorated gypsum board is made utilizing such paper as one of the cover sheets.

This application is a continuation of our application Ser. No. 604,647, filed Dec. 27, 1966, now abandoned.

This invention relates to gypsum board having a decorated surface formed thereon prior to manufacture of the board. The manufacture of gypsum boards is well known and such boards are widely used in the building art, such as for wallboards and the like. Gypsum boards are made by enclosing an aqueous calcined gypsum (calcium sulfate hemihydrate) slurry between paper surfaces to form a continuous sheet of a general thickness of about 1/4 to about 3/4 inch. When the calcined gypsum slurry sets the continuous sheet is cut into boards usually between 8 to 12 feet in length. These boards pass through a dryer in which the water is removed at a very fast rate by means of heat. The fast rate of drying is dependent upon good moisture transmission from the set aqueous calcined gypsum slurry through the paper. If the rate of drying is reduced to great extent considerable difficulty may be encountered with the board such as, for example, the cover paper sheets may separate from the core in spots to form a continuous sheet of a general thickness of about known as "paper blows." Also, substantial variation in the passage of moisture through the opposite faces may result in warping.

It is often desirable to improve the appearance or other properties of the paper surface of a gypsum board or wallboard. This can be done after the board has been made without difficulty, but it is obviously desirable to improve the appearance of the board by decorating the face cover prior to manufacture of the board. However, treatment of the paper surface before formation into a board causes manufacturing problems since modification of the face paper such as by application of a coating thereto greatly affects the passage of moisture therethrough during drying of the board with the incursion of difficulties previously noted. At present, the usual method of improving the surface of a gypsum board is to laminate a sheet of material such as paper, vinyl or plastic to the exposed surface of the dried board. Thus, for example, a wood-grain effect has been achieved in the past by laminating thin wood veneer or paper sheets printed with a wood-grain design to the face sheet of a completed board. Likewise, other designs in paper, plastic or fabric of various types

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have been used as a lamina. A coated paper is usually the lamina of choice when a low cost product is desired. The application of a predecorated lamina to the face cover of a dried board involves operations which are slow and relatively expensive due to the extra handling, slow line speeds, adhesive and other material costs. Thus, pre-decoration of the surface of the paper prior to its formation into a gypsum board constitutes a significant desideratum.

Past attempts in the art to predecorate the face paper of a gypsum board with a coating prior to its use in the formation of a gypsum wallboard have not been completely successful since these coatings seriously lower the rate of the passage of the water therethrough from the core so that blisters, paper blows or warping occur.

It is therefore an object of this invention to provide a method of manufacturing a gypsum wallboard in which at least one of the paper sheets which are used to encase the aqueous calcined gypsum slurry is predecorated before forming into a wallboard.

It is another object of this invention to provide a gypsum wallboard in which at least one of the paper cover sheets has a decorated surface which is integral with the surface fibers of the paper.

It is a still further object of this invention to provide an embossed cover sheet for gypsum board having an aesthetically improved surface, which paper can be used in the production of a gypsum board without substantial change in the gypsum board manufacturing procedure.

It is another object of this invention to aesthetically improve the surface of a paper cover sheet for gypsum board prior to formation of the board without adversely affecting the tensile strength of said paper and hence that of the board.

It is a still further object of this invention to provide a porous, decorated paper sheet.

It is yet another object of this invention to decorate a paper sheet with a coating which makes the sheet less porous and then to make the coated sheet more porous by embossing the coated surface thereof.

Other objects and advantages of the present invention will be readily apparent from the following description and claims.

In accordance with one embodiment of this invention paper commonly used in the manufacture of gypsum board is given a decorative treatment to improve the appearance thereof prior to its use in formation of gypsum board. A variety of decorative treatments can be achieved, such as, for example, printed floral patterns, basket weave, cross-hatched or lined patterns as well as solid colors can be applied to cover paper. Likewise, the paper can be treated to simulate a wood-grain effect by appropriate ink printing with the printed surface then preferably being protected by application thereto of a suitable transparent coating. Many paper coating materials suitable for this purpose are known in the art. Thus, for example, the protective coating material can comprise drying oils, conventional resin, varnish and lacquer coatings and the like. After the paper surface receives a desired decoration or decorative effect the so-treated paper is embossed. Embossing of the treated paper is an important feature of the present invention since embossing